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ACTINOMYCETALES

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## STUDIES IN THE CLASSIFICATION AND NOMEN- CLATURE OF THE BACTERIA

### VIII. THE SUBGROUPS AND GENERA OF THE ACTINOMYCETALES

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#### Order III. **Actinomycetales.** *Nom. Nov.*

##### Synonyms:

*Actinomycetes* Balbiani, 1886, p. 542.

*Trichobacteriacei* Fischer, 1895, p. 138 in part.

*Mold-like organisms, not typically water forms, saprophytic or parasitic. Sheath not impregnated with iron, true hyphae with branching often evident, conidia may be developed, but never endospores. Without granules of free sulphur and without bacteriopurpurin. Never producing a pseudoplasmodium. Always non-motile.*

The order *Actinomycetales* contains a single family, *Actinomycetaceae*.

#### Family I. **Actinomycetaceae.** *Fam. nov.*

Characters same as those of the order.

The following names have been used for genera which may be included in this family.

*Actinobacillus* Brumpt, 1900, p. 849

*Actinobacterium* Haass, 1906, p. 180

*Actinocladothrix* Affanassieff, 1888, p. 79

*Actinomyces* Harz, 1877, p. 125

*Cohnistreptothrix* Pinoy, 1911

*Viscomyces* Rivolta and Micellone, 1879, p. 145

*Leptotrichia* Trevisan, 1879, p. 138

- Micromyces* Gruber, 1891, p. 648  
 not *Micromyces* Dangeard, 1888, p. 55  
*Nocardia* Trevisan, 1889, p. 9  
*Streptothrix* Cohn, 1875, p. 186  
 not Corda, 1839  
*Thermoactinomyces* Tsilinsky, 1899, p. 500  
*Rasmussenia* De Toni and Trevisan, 1889, p. 930

The genus *Actinobacterium* has had no definite specific names ascribed to it.

The following are invalid because previously used for other distinct groups of organisms: *Micromyces* and *Streptothrix*.

The name *Actinocladothrix* was used by Affanassieff in the combination *Bacterium actinocladothrix*, but several authors have listed the name as though it had been used as a genus.

The following generic names are therefore to be considered, or at least are not invalid for any of the preceding reason: *Actinobacillus*, *Actinomyces*, *Cohnistreptothrix*, *Discomyces*, *Leptotrichia*, *Nocardia*, *Thermoactinomyces*, *Rasmussenia*.

The genera may be differentiated by the following key.

*Key to the genera of Actinomycetaceae*

- A. No evident *aerial* threads or conidia formed. Usually parasitic. Often anaërobic or microaërophilic.
1. Threads usually not branched.
    - a. Threads disjoining very readily; long mycelial threads uncommon.  
 Genus 1. *Actinobacillus*
    - b. Threads longer, not disjoining into short rods.  
 Genus 2. *Leptotrichia*
  2. Threads more or less branched, frequently clubbed in tissues.  
 Genus 3. *Actinomyces*
- B. Aërial threads and conidia evident on culture media..... Genus 4. *Nocardia*

Genus 1. *Actinobacillus* Brumpt, 1900, p. 849

*Filament formation; resembling streptobacilli. In lesions no mycelium formed, but at peripheries finger shaped branched cells are visible. Gram negative. Not acid fast.*

Possibly the genus belongs with the *Bacteriaceae*. It is evidently a transition form.



The type species is *Actinobacillus lignieresii* Brumpt, the cause of actinobacillosis in cattle.

Genus 2. *Leptotrichia* Trevisan, 1879, p. 138

Synonyms:

*Leptothrix* Robin, 1847, p. 345

not *Leptothrix* Kuetzing, 1843, p. 198

*Rasmussenia* Trevisan, 1889, p. 930

Rod shaped or filamentous cells, non motile, unbranched, without aërial hyphae or conidia; parasites or facultative parasites.

The type species is *Leptotrichia buccalis* (Robin) Trevisan. This genus is commonly termed *Leptothrix*, but certainly forms as unlike as *Leptothrix ochracea* and *Leptotrichia buccalis* do not belong in the same genus. *Leptotrichia* was created by Trevisan in 1879 with *L. buccalis* as the only species, but in 1889 he enlarged the genus, removing the mouth forms to the genus, *Rasmussenia*.

Genus 3. *Actinomyces* Harz, 1877, p. 125

Synonyms:

*Streptothrix* Cohn, 1875, p. 186

not *Streptothrix* Corda

*Discomyces* Rivolta and Micellone, 1879, p. 145

*Micromyces* Gruber, 1891, p. 648

not *Micromyces* Dangeard, 1888, p. 55

*Nocardia* Trevisan (in part)

*Oospora* Sauvageau and Radais, 1892, p. 242

not *Oöspora* Wallroth, 1833, p. 182

*Cohnistreptothrix* Pinoy, 1911

Branched filaments, resembling mycelium, breaking up into segments which may function as conidia. Usually parasitic. Clubbed ends conspicuous in lesions. Not producing aërial hyphae or conidia.

The type species is *Actinomyces bovis* Harz, the cause of bovine actinomycosis.

Genus 4. *Nocardia* Trevisan, 1889, p. 9

## Synonyms:

*Actinomyces* of many authors*Streptothrix* of many authors*Thermoactinomyces* Tsilinsky, 1899, p. 500

*Branched filaments, resembling a mycelium, readily breaking up into segments. Usually saprophytic. Aërial threads and conidia commonly produced.*

## REFERENCES

- AFFANASSIEFF, M. J. 1888 Ueber die klinische Mikroskopie und Bakteriologie der Aktinomykosis. St. Petersburger med. Wochenschrift. New Series, **5**, 79.
- BRUMPT, E. 1910 Precis de Parasitologie. Paris.
- COHN, FERDINAND 1875 Untersuchungen über Bakterien II. Beiträge z. Biologie d. Pflanzen, **1** (Heft. 3) 141-208.
- DANGEARD, A. 1888 Memoire sur les Chytridines. Le Botaniste, **1**, 55.
- DE TONI AND TREVISAN 1889 Schizomycetaceae. Naegeli. In Saccardo's Sylloge Fungorum, **8**, 923-1087.
- FISCHER, ALFRED 1895 Untersuchungen über Bakterien. Jahresber. f. wiss. Bot., **27**, 1-163.
- GRUBER, M. 1891 Micromyces Hoffmanni. Cent. f. Bakt. Par. u. Inf., **10**, 648.
- HAASS, EVERHARD 1906 Beiträge zur Kenntniss der Aktinomyceten. Cent. f. Bakt. Par. u. Inf. Abt. 1, **40**, 180-186.
- HARZ, C. O. 1877-78 *Actinomyces bovis*, ein neuer Schimmel in dem Gewebe des Rindes. Jahresber. d. Muenchener Central Thierarznei Schule, 1877-78, p. 125-140.
- KÜTZING, F. T. 1843 Phycologia generalis,
- LACHNER-SANDOVAL, V. 1898 Ueber Strahlenpilze. Inaugural-diss. Strassburg.
- LEHMANN AND NEUMANN 1896 Atlas und Grundriss der Bakteriologie.
- PINOY, E. AND MORAX 1911 Sur les concretion des voies lacrymales. Etude mycologique Bull. soc. Ophtalmologie de Paris, no. 3.
- RIVOLTA AND MICELLONE 1882 Giornale Guglielmo da Saliceto, Piacenza. p. 145. 1879. Giornale di Anat. e. Fis. degli. An. Pisa.
- ROBIN 1853 Histoire naturelle des vegetaux parasites.
- SAUVAGEAU, C. AND RADAIS, M. 1892 Sur les genres Cladothrix, Streptothrix, Actinomyces et description de deux Streptothrix nouveaux. Ann. d. l'Inst. Pasteur **1**, 242-273.
- TREVISAN, V. 1879 Prime linee d'introduzione allo studio dei Batterj. italiani. Rendiconti. Reale Istituto Lombardo di Scienze e Lettere IV. Series **2**, **12**, 133-151.
- TREVISAN, V. 1889 Gen. e spec. delle Bacteriaceae.
- TSILINSKY, P. 1899 Sur les Mucidineés Themophiles Ann. de l'Inst. Pasteur, **13**, 500.
- WALLBOTH 1833 Flora crypt. germ., **2**, 182.





